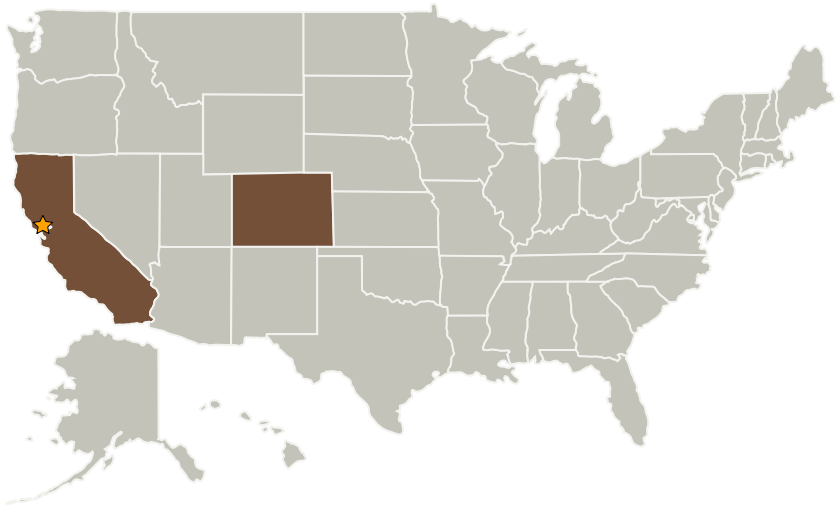
Triple3 Redundant Spacecraft Subsystems (T3RSS), Phase II

Completed Technology Project (2007 - 2009)

Project Introduction

T3RSS is the system engineer's tool that allows a systematic approach to ensuring that even if one or more failures occur in a single component or subsystem, then the subsystem will continue to function and most, if not all, mission objectives can still be achieved. T3RSS does this by using a Configuration Manager for a Dynamically Reconfigurable System (CMDRS). This piece of logic employs a Mission Survivability Assurance Algorithm (MSAA) for the subsystem. Should radiation, manufacturing or even launch damage render a particular region of the FPGA temporarily or permanently unusable while on orbit, then the MSAA can shift the critical logic to a new region, or even to a new FPGA altogether. The shifting logic uses a network of components to maintain the ability of each logic block to communicate with the required memory and hardware. Ensuring that needed logic is always available ensures that the satellite can maintain 100% mission survivability even during failures.

Primary U.S. Work Locations and Key Partners



Organizations Performing Work	Role	Type	Location
★Ames Research Center(ARC)	Lead Organization	NASA Center	Moffett Field, California
Redefine Technologies, Inc.	Supporting Organization	Industry	Golden, Colorado

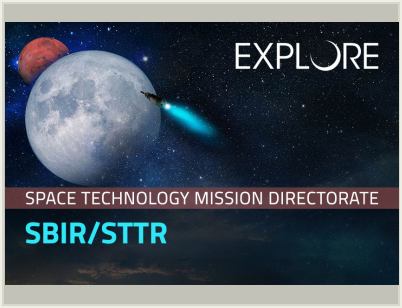


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Table of Contents

Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Center / Facility:

Ames Research Center (ARC)

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

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Primary U.S. Work Locations	
California	Colorado

Project Management

Program Director:

Jason L Kessler

Program Manager:

Carlos Torrez

Technology Areas

Primary:

- TX02 Flight Computing and Avionics
  - TX02.2 Avionics Systems and Subsystems
    - TX02.2.5 High Speed Onboard Interconnects and Networks